DOCUMENT RESUME

ED 128 963 EA 008 740

TITLE A Review of District 4J Computer Services.
INSTITUTION Eugene School District 4J, Oreg. Div. of Research, Development, and Evaluation.
PUB DATE Nov 75
NOTE 32p.; Pages 27 and 29-31 removed due to copyright restrictions

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Computer Oriented Programs; Data Processing; Elementary Secondary Education; Information Needs; *Management Information Systems; Program Costs; *Program Descriptions; Program Evaluation; *State Programs; *State School District Relationship
IDENTIFIERS Eugene Oregon School District 4J; *Oregon Total Information System; OTIS

ABSTRACT

This report examines the data processing services provided to Eugene (Oregon) School District 4J by the Oregon Total Information System (OTIS) and provides recommendations to the district administration to aid policy-making and planning in the area of computer services. The report focuses primarily on the use of the computer for management purposes; the need for instructional computer services is not considered. Information for the report was gathered partly in interviews with 37 principals and 13 other district personnel, as well as with 30 nondistrict personnel in the field of computer services. Visits were also made to the research departments of five large school districts throughout the West. Separate sections of the report discuss OTIS-district relations, the district's need for computer services, costs of computer services from OTIS, and issues to consider in establishing a data processing policy for the district. The appendix contains a letter drafted by the director of OTIS in response to the district's report. (Author/JG)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

SCHOOL DISTRICT 4J EUGENE PUBLIC SCHOOLS

200 North Monroe Eugene, Oregon 97402 503/687-3123

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED128963

A REVIEW OF DISTRICT 4J COMPUTER SERVICES

November, 1975

Division of Research, Development and Evaluation

EA 008 740

Table of Contents

	page
Introduction	1
A Little About OTIS and OTIS-District Relations	2
Services Presently Provided by OTIS	4
The District's Need for Services	6
Table I.	7
Costs of Computer Services from OTIS	14
The Process of Improvement	16
Issues of Consider: File Reorganization, Terminal Usage and Integrated Data Base Capabilities	16
Closing Comments	21
OTIS' Reply to the Draft of this Report	22-33

Introduction

Although the size of Eugene's School District 4J is small by big city standards, it is large enough to be called a big business. Included in this business is the management of 44 schools, 2,300 employees, 20,000 students and an annual budget of $33,000,000. It is going to grow. According to Lane Council of Governments (L-COG) predictions, within approximately 15 years all schools in the District will be filled and new ones will be required.

In recent years, administrators of educational districts have been confronted with a complex environment of personal decision, instructional approaches and special programs. In this environment, the administrator must make policy decisions which cumulatively affect hundreds of millions of dollars of public money. In this decade, the School Board and administration will spend approximately $285,000,000 dollars. The laws affecting these operations are also becoming more complex. Moreover, the community around the Eugene school districts contains a minority of active and very probing citizens who say they do not get adequate information from the District about the programs being provided, how much they cost, and how well they are working.

As personnel and program costs inflate, as resources become scarcer, and as citizens respond to tax increases with defeats of local tax levies, the District's budget process becomes a critical decision-making arena. This further compounds the need for information, and the District has begun to interject information about program effectiveness, cost efficiency, and other variables into its budget process for allocating those diminishing resources. The capabilities and services provided by the District's data processing agency will affect all of the considerations mentioned above.

The Research, Development and Evaluation Division was asked by the Superintendent's Office to prepare a report on the data processing services that the District uses. The purpose of this report is to provide recommendations to the District administration to help policy and planning in this area.

The report focuses on the use of the computer primarily for supporting management decisions. The need for instructional computer services is not addressed in this report. The report is <u>not</u> an evaluation of the data processing agency which sells services to the District. Rather, the report considers in-District data processing issues, and issues associated with the outside data processing agency. The text attributes responsibility where appropriate.

The information for this report was obtained from a series of interviews with 37 principals, 13 other District personnel, and 30 non-District personnel, including local data processing operations salesmen, computer consultants, and research and computer people in other school districts. Visits were made to the research departments in the school districts of

Beaverton and Portland, Oregon; Dallas, Texas; Seattle, Washington; and San Francisco, California. Moreover, 4J files on OTIS-4J relations were reivewed, and a search of the literature on educational computer-based information systems was also made. District records and correspondence in the files of the Assistant Superintendent of Business Services were read and members of the IED Board were interviewed. All but two members of the District's School Board and Budget Committee were asked questions about their information requirements. Additionally, a re-survey of District employees responding to a 1969 survey was also done.

A Little About OTIS and OTIS-District Relations

The agency which provides the District's computer services is the Oregon Total Information System (OTIS). The process which created OTIS began during the 1963-64 school year with the installation of tabulating equipment in the Lane County Intermediate Education District (Lane IED). By early 1965, a prospectus for improving educational data services was drafted by a coalition of interested people and that prospectus became an application for Title III planning grant money under Public Law 89-10 and the sponsoring public agency was the Lane IED Board.

While the provision of data processing services by the IED is not one of the mandated services required by ORS 334.125, such provision would be authorized by ORS 334.175.

The Superintendent of the IED, William Jones, and the seven-person, publicly-elected IED Board have administrative responsibility over OTIS. This authority is demonstrated by the fact that OTIS' reply to a draft version of this report was edited by the Superintendent of the IED before being sent to the District. The reply is placed in Appendix 1.

The OTIS department is run by Mr. Robert Dusenberry and is advised by a 20-person Advisory Committee. Sixteen are superintendents from nine Oregon counties. The stated purpose of the Advisory Committee is "to establish a body of administrators of user districts to provide recommendations to the OTIS administration and to the legal governing body (Lane Intermediate Education District Board) in any areas of interest or concern in the OTIS operation. These areas of interest or concern may include, but not be limited to, services, development, finance, procedures and personnel." The Advisory Board appears to act as a management board in that Mr. Dusenberry asks for direction from the Board and then carries it out.

The coalition of people which secured federal funding and started OTIS left in 1969 and the present management group at OTIS took over at that time. In 1969, the new director inherited a 48-person organization that was dependent on declining federal funding, encountering high rates of equipment problems, and dealing with client school districts that had been promised many financially unfeasible services by the original group that started OTIS.

In its first operational year (1968-69), OTIS received federal support of almost $900,000. Assistance from federal and state sources was gradually phased out throughout the period of 1969-72, and fiscal solvency was a recurrent problem. Self-sufficiency was attained with difficulty, but achieved through a combination of reducing staff, adding new users, raising some rates, very selectively adding equipment, and creating a marketing strategy which emphasizes the selling of routine services to a large number of users. OTIS personnel have expressed the view that OTIS operates under a very cost-conscious attitude on the part of the IED.

District 4J formally joined the project in the fall of 1967, and by 1969, the District's discontent with the quality of OTIS' services was so great that a survey of the District staff was carried out by the District's business manager. The survey results were very critical of both OTIS' attitude toward the District and the lack of reliability of OTIS' services.

In preparing this report, a re-survey was made of those District personnel who both answered the 1969 survey and were still with the District. The seventeen people were each sent a copy of their 1969 comments and asked how their present attitudes corresponded to their 1969 comments. A high proportion replied that they were considerably more satisfied.

OTIS-District relations have not been easy throughout the years. The District has periodically demanded improved services, while OTIS has had difficulty stabilizing its own internal situation and simultaneously broadening services.

An example of this is the District's request in 1971-72 for a double-entry bookkeeping system. OTIS originally refused to implement the system, and the District had the burden of convincing the OTIS Advisory Board in order to obtain OTIS' cooperation.

The present organizational structure places a burden upon the user district when it requests a project. OTIS is both part of the Lane IED agency and also has an Advisory Board which functions in a management role, much like the boards of independent non-profit organizations. This organizational structure diffuses responsibility for decision-making and places a burden upon the user district when the district makes requests for decisions about what OTIS is willing to do.

At a District expense of $10,000 to $15,000, not counting personnel and overhead costs, the District was able to move OTIS from a manual, single-entry system to double-entry bookkeeping. OTIS declined to pay for the District's costs, even though the new system is currently being used by other OTIS users.

The pattern of a District request, an OTIS refusal to implement, and subsequent District-initiated action within the OTIS Advisory Board, or with the IED Superintendent, has been a recurrent pattern in OTIS-District

relations. A similar pattern has existed in obtaining terminals, graduation requirement record-keeping, a cafeteria inventory system, and the recent hiring of a user-oriented system analyst. This pattern of accommodation through crises has characterized OTIS-District discussion of major District-initiated requests.

In the area of special requests, OTIS is perceived to be defensive, often unresponsibe, and more interested in selling routine services to a large number of users. This perception of OTIS' defensiveness and inertia is widespread. This view was frequently volunteered by people in various private and public agencies.

In the area it chooses to emphasize, however, OTIS has made great improvements. There is general agreement among the District personnel talked to that the routine OTIS services are considerably more reliable and efficient than they were five years ago. This improvement is especially noticeable in the attitudes of people who work in school buildings. General routine services have definitely improved in promptness of delivery and also reliability of product, especially at the school level. There are also complaints about routine services, primarily from administrative and support personnel.

OTIS' more stable financial and marketing strategies have resulted in a steady drop in per-pupil cost to user districts. In 1972-73, the contract cost was $8.80, and it is now $7.00. As Mr. Dusenberry's reply indicates, approximately one-third, or 180,000, of all Oregon students from 65 school districts are now in the OTIS user base. And the OTIS agency is well on the way to being the statewide school data processing system. The growth of OTIS has been accompanied by a steady push on the state level through the passage of ORS 326.081.

Services Presently Provided by OTIS

There are two basic types of services that OTIS provides to its users: instructional and administrative. The primary concern of this report is with administrative services.

The computer hardware now used at OTIS includes an IBM 360-50 and three 2000F Hewlett-Packards (H-P). The IBM 360 is used to perform the administrative services, and the H-Ps are used for instructional purposes. These computers are each connected to a smaller computer, a GTE IS1101 (TEMPO I) which registers terminal output and switches control to the appropriate computer according to the desired function.

A wide range of routine administrative services is available to Oregon schools through OTIS; the complete set of services is called "The Full Administrative Package." Of the 72 agencies contracted for OTIS services in 1974-75, 42 districts, including 4J, subscribed to the Full Administrative Package. In this arrangement, the user districts maintain their own files via the leased terminals and receive batch-generated

reports including fiscal, cafeteria inventory-accounting, payroll, personnel, inventory, enrollment, attendance, grade reporting, testing, class scheduling and graduation requirements record-keeping reports. These reports are automatically generated yearly, quarterly, monthly or weekly, according to what kind of report it is.

OTIS stores its users' data in five main separate file categories: students, staff, payroll, inventory, and finance. OTIS presently has approximately seventy separate file categories and uses an index-sequential access method (ISAM) for entering those files. OTIS has very little responsive programming ability, since it organized for routine batch processing.

In addition to the automatic report preparation, the Full Administrative Package allows users to obtain information from a given file by means of an on-line, generalized inquiry program called QUERY. To use QUERY, the user enters on the terminal the name of the file to be searched, identifies which records are to be accessed and whether those records are to be listed and/or tallied. After the QUERY command has been processed, the report is printed over the terminal, or if substantial output is required, OTIS will send the printed report later.

OTIS also provides services beyond those in the Full Administrative Package (FAP). The cost of any special contract service is not included in the contract cost of the Full Administrative Package. These specially-contracted services include the following:

1. Computer Related Instruction System (CRIS)
2. Career Information System (CIS)
3. Modular Scheduling and Traditional Master Schedule Generator
4. Attendance Accountability System
5. OTIS Automated Library System (OALS)
6. Special jobs or reports

Day-to-day OTIS-District communications are mediated by a coordinator hired by the District. In interviews, building personnel typically stated that they were pleased with the accessibility and response of the District's coordinator.

As mentioned earlier, each of OTIS' users is responsible for their own file maintenance. The IED leases terminals for the District's administrative and instructional purposes and the District decides the locations of each.

The 4J Business Office has five terminals which can access and update any of the District's files. These terminals are printers only and do not have the more sophisticated capabilities that cathode ray terminals

have. All inquiries and updates pertaining to personnel, payroll, inventory, and fiscal accounts must be entered on one of these terminals. Some problems currently exist with terminal usage.

A Board member of the District recently asked for a report on accident statistics in 4J schools. The data, collected last year, had not yet been inputted, due partially to a lack of adequate clerical help and partially to the fact that not enough time could be obtained from OTIS to input the terminal.

The other 29 terminals are located in various school buildings and each terminal is classified as "administrative" or "instructional." An instructional terminal, which would be for student use, theoretically cannot access any of the administrative files. An administrative terminal has more flexibility because it can be used in either the instructional or administrative vein. However, this terminal can access and update only those records pertaining to students enrolled in the school in which the terminal is located.

Only four elementary schools have terminals: Adams, Edgewood, Silver Lea, and Washington. Each junior high has one or two terminals, while each senior high has three or four terminals. Elementary schools without terminals update their student records by submitting the information to the business office, or make arrangements to use a terminal in a nearby school. For example, a secretary without a terminal would drive to a nearby school with a terminal.

The District's Need for Services

The Research, Development and Evaluation Division receives many information requests. From the interviews with District personnel and from other received requests, the list in Table I has been generated. This is a list of known requests. These requests are described in greater detail immediately following Table I. Following this list, a second list of information requests is given. These lists are given because it is very difficult to estimate the District's need for information. A defensible way of roughly estimating this need is to use actual requests for information as an indicator. None of the items mentioned in these lists are requests of the Research, Development and Evaluation Division. For the purposes of estimating information needs, requests of that Division are excluded.

Table I

1. Financial reports for the lunch program
2. Computerized health records
3. Better attendance, dropout, and suspension data
4. Computerized federal and state reports on number of staff and what they do
5. Performance data on accomplishments of District-wide programs
6. Information for Title I evaluation
7. Computerized records of services and programs provided to each student
8. Socio-demographic information on selected areas
9. Information on possible areas of racial or sexual discrimination in hiring, sports and programs
10. Projections for boundary changes, enrollment, building capacity and regional growth patterns
11. Information for the Eugene Planning Commission about the impact on the school district of Planning Commission decisions.
12. Data on grading patterns by teacher or subject
13. Computerized transportation routing and scheduling

1. A cafeteria inventory-accounting is now computerized and is available within the Full Administrative Package. However, the financial reports that schools generate about the District's lunch program are generated entirely by hand. These reports require significantly large amounts of data to be compiled on a daily, weekly and monthly basis. Accuracy is very important because school lunch reports are used by the State to compute financial reimbursement to the District. Data for the report originates in the schools, where the secretaries collect the money and keep a record of the total of each type of tickets given (free, reduced fee, or paid), and the cook accounts for the meals distributed. The data are then sent to the business office weekly and monthly where they are checked and compiled into the final report to the State.

This procedure could be streamlined if this District were to have a way of inputting data from the schools and automatically compiling them to generate reports. The District has not requested OTIS to help the District do this. This would be a procedure parallel to its treatment of quarterly attendance reports. The provision of quarterly attendance reports is perceived to be a very useful OTIS service and can be a model for a lunch reporting system.

The school secretaries and cooks would probably have no less work to do, but once they had entered the data on the terminal, the manual tasks would be completed. Moreover, other districts would probably find this a useful service.

2. The health records of the District are also maintained manually, with OTIS assisting in form processing. Student record files in fifteen schools were examined for this study and at least five separate health cards were found to be used in the various schools. This lack of standardization is typical of student records in general.

The formal process for maintaining these files is as follows: in the fall of each year, OTIS sends a stack of "Student Health Survey" forms to each school nurse. The nurse fills in each form with the student's medical history and returns the forms to OTIS. OTIS then prints a list by school of which students have not had certain immunizations. A report is also prepared notifying the parents of what needs to be done. Forms are sent to the parents. The parent then enters on this form if the shot has been given, when, and by which doctor, and the form is returned to the nurse who updates the school's record.

This system is cumbersome for the nurses, especially for schools with high turnover rates. Moreover, the process records only a minimum of information about students, is markedly affected by parent cooperation, and must be re-duplicated each year.

District 4J needs a computerized health record for each student in which data can be kept and updated continuously rather than be re-duplicated manually in periodic surges. This health record should be part of the permanent record of a student. Such a system would eliminate the need for the manually-created "Student Health Survey," clean the records, would allow timely reports to be generated at will, and would lead to a more cost-effective use of health service personnel. There is presently little justification for using expensive nurse personnel to act as file clerks.

The necessity for health services and the question of why registered nurses should be employed is repeatedly raised. In the last six months, the Research, Development and Evaluation Division has been asked about these issues by two members of the budget committee and two members of the Superintendent's staff. Moreover, a preliminary committee report of the Small Schools Task Force raised these same issues. These issues cannot be studied in a cost-efficient way with the present manual systems of record keeping.

3. A better method of collecting attendance data is needed. This is a widespread need and has been requested by three Board members, a regional director and school administrators. The District currently does not know the characteristics of students who drop out of school, why they drop out, or what are effective ways of identifying people who might drop out. The following quote by a high-school vice-principal is an excellent statement of the problem of obtaining accurate attendance data. The quote is unedited except for the deletion of the high school's name. The memo contains a written "approved and endorsed" by the school's principal.

"As per your request, I would like to submit a brief written summary of several thoughts on the implementation of a useful computerized attendance reporting system.

Prior to the inception of OTIS, I vividly recall a meeting in the temporary downtown OTIS office where Mr. Bennett, OTIS Director during the first several years of its operation, explained some of the services which would be provided schools. Mr. Bennett or one of his assistants showed us what he called a "touchtone" phone system that would use small individualized student cards and provide us with the means of inputting by-period student attendance data directly into the computer. They also explained how we would be able to get back all sorts of printouts of significant attendance data and so forth. A reasonable question at this point is to ask, where is this wonderful service that was promised us as part of the reasons why School District 4J should buy into the OTIS project? I can't help but feel that someone didn't deal with us in an honest and forthright fashion on this particular item. We are, of course, quite aware that OTIS has provided schools attendance services for a number of years, but it is oriented toward satisfying state department reporting requirements, and it really does not help us in terms of dealing with by-period attendance. It is not the system that we were lead to believe would be available to us, and it certainly isn't of much value in many respects.

In my opinion, there is one overriding factor for requesting the complete computerization of all aspects of a school's attendance system. Essentially, this centers around the processing of a huge amount of data that can be handled almost instantaneously and error-free by the computer, while taking a disproportionate amount of clerical time when done by hand. In fact, because it takes so much time, the job is never really completed and is subject to quite a bit of human error. Let me give a numerical example of one aspect of the data processed by hand in the (- name -) attendance office last year: (approximate figures)

--enrollment, 1,100 students
--students average six different classes
--normal absenteeism averages 10 percent
--1,100 times 10 percent equals 110 names of absentees generated per period
--110 times six classes equals 660 names generated per day
--660 times 170 school days equals 112,000 absentee names processed by the attendance office per year

We desperately need computerized assistance to process this and all other sorts of data so that significant information can be sorted out from the mass of data and dealt with by teachers, counselors, administrators and parents.

A legitimate question to ask at this point might focus upon the use of attendance data in the operation of the school other than for the satisfaction of state department reports. Here at (- name -) High School, and I think this is true of most all other high schools, there is a huge correlation between absenteeism and failures or drop-outs. In the vast majority of such cases, one of the first significantly visible factors available to school people is the missing of classes. Obviously, the sooner this can be recognized, the more quickly we can attempt to deal with the situation. This is not to say that a better attendance accounting system would solve the so-called drop-out problem, but at least it would provide more tools with which to cope with it. I might also add that parents are very desirous of being able to quickly receive accurate information on their students' absenteeism, and an improved attendance package should be able to accommodate this request.

We have computerized certain aspects of student scheduling, competency, grade reporting, certain aspects of the District's fiscal operation, etc. How about tackling the attendance matter next by putting the new OTIS programmer to work on it? I recognize that this will cost additional money, but I suspect that the recent implementation of a computerized competency reporting system wasn't free either!"

4. A principal at a junior high has requested help in eliminating the administrative cost of filling out required state and federal minority reports. He is referring to the Department of Health, Education and Welfare's Office of Education Form 237 4-1.1/75, the elementary and secondary schools' civil rights survey. Form OS/CR 102, Office of Management and Budget number 85-0110 and the Oregon State Department of Education's form for junior high schools 1974-75 form 3184 (5-74).

The information needed to complete these forms is already in the District's computer but is scattered across school and staff files and cannot be readily cross-categorized or broken down by school. The Research, Development and Evaluation Division has not estimated the administrative costs of filling out these reports, but the District incurs hidden and unbudgeted personnel costs. These costs occur among principals and vice-principals, who are expensive personnel.

5. The standardized test data collected by the Research, Development and Evaluation Division is the single major source of comparative performance data on District-wide programs. With a few exceptions, almost no schools collect any other systematic data on program evaluation. Concomitantly, members of the Board and budget committee, Superintendent's staff, and other administrative staff have asked for summary commments on District performance.

The District's computer files stored with OTIS contain much information relevant to program performance. However, these data are also scattered across unintegrated files, are difficult to pull together within defined reporting categories, and are not readily retrievable at the building level.

6. The District is required to provide evaluative data to the federal government as a condition of receiving Title I monies "educationally disadvantaged" youth. The collection of this information is paid for out of the Title I funds received; however, none of standardized test results purchased under this program are integrated with the district's other data files, nor can this information be cross-filed or compared to other data. Yet the Title I population and the special resources that go into the program are an excellent comparison against which to estimate the impact of District resources on the regular program.

7. A regional director has expressed a request for computerized records of services and programs provided to students. For example, the director wishes to identify children who are below grade level in reading and what the District has done over the years to help them. The specific example grows out of an underlying concern with how the District identifies groups of children who need help. What kind of help is given and what is the long-range impact over the years of this help?

8. A principal at a junior high has requested socio-demographic data on the area around his school in order to explain and justify his request for counseling services to the school's parent advisory group. Some demographic information was also requested during discussions of the standardized test report. This information, which is not in the District's computer files, once collected, cannot be readily integrated or correlated with data that is in the files.

9. The District's administration has stated that it will comply with Title IX regulations promulgated by the Department of Health, Education and Welfare. Moreover, it is District policy to comply with civil rights and affirmative action programs. Various issues of sexual or racial discrimination are the responsibility of the Personnel Department and administrative units within the Educational Services Department.

For example, the Multi-Racial Team of the Educational Services Department has asked the Research Department if it has information on grades, performance and drop-out rates of Native American children. The team additionally would appreciate a bilingual needs assessment of students to determine how many students speak more than one language, which language is spoken at home, and what skill level does the child have in each language.

10. There is a need for systematic planning information. For example, a regional director has expressed a need for knowing regional growth patterns. At present, the director observes new building starts within his area as he drives through it, and has in the past called builders to find out future building plans.

The best information the District has available on long-range planning of enrollment projections, population growth and the need and timing for new schools is found in the Small Schools Task Force which relied heavily on Lane Council of Governments (L-COG) work.

Information on the above subjects is currently not being collected, stored or produced by any group within the District's administration. The 325 page Building Capacity Report is currently the only major in-District effort to answer information requests of this type, but it is a collection of basic information which is not integrated with other data.

11. A number of the Superintendent's staff would like information for the Eugene Planning Commission on the impact on the school district of Planning Commission decisions.

12. Several school principals have requested information about grading patterns by teacher or subject. While some of this data are available, the search for patterns such as documenting the general increase to give more and more higher grades is difficult.

In addition to the above twelve requests, the Research, Development and Evaluation Division interviewed all but two members of the 4J School Board and Budget Committee. Each was asked what additional information they wished to know about the District's program. All but one of the Board and Budget Committee expressed a need for additional areas of study by the District. The specific topics varied widely. As mentioned previously, the requests for information are presented as a way of roughly estimating the need for information.

13. In what direction is the curriculum heading? Specifically, which courses are valuable only if the student is going to college? What proportion of students go to college? How many and what kinds of advance placement courses does 4J offer, and should 4J offer these courses, or should students go elsewhere, such as to Lane Community College?

14. Is 4J spending its money wisely? For example, are private schools such as Educational Environments, Inc. (EEI) giving a more well-rounded program for less money? EEI, run by William Sheppard, has a five-to-one student/teacher ratio, yet it costs considerably less than District per-pupil costs to educate a student at the school.

15. In general, the District should find ways to place more emphasis on studying failures, mistakes, and problems which have been overlooked. One member pointed out that "white ghetto" areas exist in the District, but felt that children in them don't get any special consideration because they don't fit into minority classification.

16. Are children learning to use available resources? For example, are libraries in the schools in use? Are children taught to use these resources and to find new information exciting?

17. How much teacher and aide time is actually spent teaching, and how much time is spent doing housekeeping chores, mothering, etc.? In other words, what is teacher productivity?

18. Has an erosion of trust occurred between teachers and administrators in the District? The person interviewed felt that teachers believed that administrators are only concerned about their own paychecks.

19. Are alternative schools catering to a narrow population? For example, are the Opportunity Center and Action High getting only under-achievers, and should these programs include medium and high achievers?

20. Fringe benefits need to be reviewed. Substantial sums are expended for fringe benefits, but these amounts are often hidden in the budget.

21. One member was concerned that mathematics and sciences were not separately listed and assigned a priority ranking in last year's Budget Message. This person wondered if this was because only "exotic" programs are on the list, and whether other programs not on the list are "sacred cows."

22. There were several questions about teachers. What is the average amount of experience of teachers, their average salary, average salary per work day, and average length of work day? Do teachers get paid for vacation days?

23. One member asked about "team teaching" and wondered if it was going to be continued on a large scale. This person's understanding was that even though a team is made up of two part-time teachers, each received full fringe benefits. The opinion this member held was that as an experiment, the costs were acceptable, but on a large scale, they would become significant.

24. Alternative schools should be added to the list of programs to be reviewed. The member who mentioned alternative schools said that "They say alternative schools cost the same (as regular programs), but that's baloney." This person's position is that these programs are constantly asking for more and more resources. The member asked if students in alternative schools do as well as students in the District's regular programs, if alternative schools meet minimum program standards, and how much learning goes on?

25. Do junior high schools fill students' educational and social needs? This member felt that junior high school years were crucial ones and that the eighth grade is a watershed year.

26. One member asked for more information about developing students' decision-making ability. Do our schools work toward improving a student's decision-making ability, and are 18-year-olds capable of making their own decisions?

27. One member felt that a review of specialist positions is needed, and wondered if too much emphasis had been placed on the development of specialist services for children to the detriment of regular program services and the teacher/student ratio.

The people interviewed were also interested in knowing more about ongoing District programs and wanted information in four main areas concerning existing programs: (1) what exactly the program does and what are its goals, (2) for whom the program does it, (3) how are students chosen for the program, and (4) is the program operating as it should in achieving its goals. Driver education, preventive teams, counseling, transportation, foreign languages in the junior and senior high, multi-racial teams, senior high interscholastic athletics, health services, psychologists, junior high mathematics, and Teacher Center were specific programs mentioned as needing further intensive study. Of concern to a number of board members was the linkage between programs. For example, do the communication cadre, preventive team, health services, social workers, and counselors work together on a full treatment plan or share information, or does the student see one specialist at a time, like a series of injections, without much linkage?

None of the requests listed above were initiated by the Research, Development and Evaluation Division. The requests arise from people associated with the District in the course of their District-related work. Estimation of needs are very subjective and this report does not attempt to quantify or assign a magnitude to information requests. However, it appears that there is a substantial demand for a wide range of information.

Costs of Computer Services from OTIS

Financing of computer services to 4J and other Lane County schools is done through the Intermediate Educational District (IED). District 4J does not have a contract with OTIS and does not pay money directly to OTIS. The taxpayers of the District are levied by the IED and the IED transfers the money to OTIS.

According to the IED accounting office, during the 1974-75 school year, OTIS received approximately $534,716 from the IED for data processing services to Lane County schools: $372,151 for contracted pupil services, $102,218 for "computer-assisted" instructional services, and $60,347 for terminal rental payments. The $534,716 does not include an additional $20,932 for an occupational information program.

4J's share of the $534,716 can be estimated by dividing 4J's tax base by the County's tax base. The resulting proportion is the percentage of the $534,716 that is attributable to 4J. In 1974-75, 4J's tax base was valued at $1,074,712,965 and Lane County's at $2,650,093,725. The proportion is 40.5%. 40.5 times $534,716 is equal to $216,847.50.

Additionally, in 1974-75, the District directly paid $6,000 for terminals, telephone jacks and other hardware-related costs. An additional $17,310 is paid out of the District's budget for the salary of the Coordinator of Data Processing, and secretarial and clerical expenses for the Coordinator's office are approximately $2,275. Not counting two other personnel in the Business Office, other people in the schools, and not counting outside consultant expenses, the direct budgeted cost to 4J for data processing is $25,580. This is a minimum figure.

The Research, Development and Evaluation Division estimates a minimum cost to 4J for data processing to be $242,427. $25,580 of this is paid directly out of the 4J budget and the remaining $216,848 is taken from the District's tax levy by the IED.

The District's flexibility in meeting its management information needs is limited by its lack of control over the money that comes from its tax base. Although the people of 4J pay approximately a quarter of a million dollars a year, ninety percent of the money goes through the IED budget and not through the District's. Thus, the elected representatives of the people from the District are in a way locked into using a particular data processing facility, and have little direct financial leverage in negotiating with OTIS. The major vehicle for effecting change within OTIS is the OTIS Advisory Board, but the District is only one voice on that board and has the burden of convincing other districts that a particular idea would benefit them.

The levy mechanism is an inefficient cost mechanism for purchasing data services, because the user district has no control over the expenditure of funds. The IED does not represent District interests and the OTIS facility has little financial impetus to change, because IED districts would have to pay twice if they created data processing services out of their budgets.

The funding mechanism helps create a situation in which OTIS has little incentive to move beyond the capabilities it installed in 1967. Thus a dilemma is created. The focal point of the dilemma is the disparity between the District's increasing demand for more sophisticated computer services and OTIS' continuing view of itself as an organization whose primary data processing role is to provide routine business services to a wide range of users.

All school districts in the OTIS system would benefit from improvements in OTIS capabilities. In this sense, the actions and desires for improvement that 4J is considering are of eventual benefit to everyone.

The Process of Improvement

The District has no data processing policy. Presently, the District receives services from OTIS and requests for special services. Problems associated with attaining of "special services" has been referred to supra. This section is concerned with what the District might do to change or improve the data processing services.

In order for the District to request changes and convince the OTIS Advisory Committee that the changes are desirable, the District must know what changes it wishes and how much the District is willing to pay for the change. In other words, the District needs a data processing policy.

The policy needs to address the following: what are the District's information needs, which of these needs are most important, what kind of data processing capabilities are needed, and what options exist to attain these capabilities, and what are the costs of these options? A process needs to be created in order to arrive at a data processing policy. The Research, Development and Evaluation Division can provide staff support for the process, but the Division does not have the technical expertise to answer these questions.

Issues to Consider: File Reorganization, Terminal Usage and Integrated Data Base Capabilities

OTIS currently uses index sequential access methods to access the OTIS data base. This method of accessing is efficient at producing large batch jobs but is not suited to process information requests requiring two or more files to be accessed with cross-indexed results. Because of the present OTIS technology, these cross-filing requests must have special one-time application programs written and costed out.

In the long run, more requests might be answerable if OTIS were to create new capabilities rather than to continue to answer user requests within the limitations of its present technology. Below, we consider three general areas: (1) reorganization of records, (2) the concept of an integrated data base, and (3) the 4J terminal system. This report does not consider the question of whether or not the District should obtain its own small computer or hire its own data processing people as Beaverton and other places have done. However, any process set up to consider data processing needs should consider and cost out these options.

1. Should student and personnel files be changed so that each student and staff member has a cumulative individual record? Presently, student and staff records are stored in yearly slices and periodically destroyed. For example, the elementary enrollment files are kept three years and then destroyed. Permanent records could be created for each individual in the District. This record would include a minimum set of necessary information and would be accessible to the individual. For example, a student record would typically contain courses taken, grades received, test scores, and special programs the student had been enrolled in.

This student information is currently recorded manually in the various students' cumulative records. In the course of this study we examined random student records in fifteen schools and found little uniformity in record-keeping. The present student files kept within the District are not a reliable source of District-based information due to the lack of uniformity in how the data are collected and recorded. The manual records are typically "sanitized" or winnowed when the student transfers to another school. The information deleted includes counselor comments and copies of parent-school correspondence. The information sent on includes courses taken, grades received, and test scores. The information on courses, grades and tests would form the primary component of permanent student records. Other information useful to decision making, such as a student's participation in particular programs, or the student's record on competency requirements, would also be included in the record.

This is a significantly different approach to the structure of an individual's record than that currently used by OTIS. However, until the student and personnel files are reorganized to hold cumulative data, significant limitations will exist on the kinds of questions District management can ask. For example, the District is unable to determine the long-range effect of any given program, such as kindergarten or junior high foreign languages upon a student, because the data have been destroyed.

Moreover, computerized records would eliminate the present manual storage of records, facilitate the transfer of students from school to school and would provide a data linkage between courses taken, grades received, socio-demographic information, and standardized test results. These data are not currently linked together, and the lack of such a linkage affects District operations. For example, the District recently released a report showing for each school and region in the District, test scores for the last four years of standardized tests. The District had no way of accounting for differences among schools and could not determine, for example, if students who had been longer in the District had higher test scores.

2. In addition to the reorganization of files cited above, terminal usage should be considered. Much contemporary computer technology has focused on how terminals can provide users with a programming

capability. Sophisticated software exists such as the Cincom Corporation's ENVIRN 1 and Lane County's Teleprocessing Communication System (TCS). The terminal systems try to maximize the job entry, data manipulation, and output capabilities of terminals. "Responsive processing", "distributed computing", and "remote job entry" (RJE) are relevant concepts here. The District should consider upgrading the sophistication of its terminal usage. It should also consider an increase in terminal usage.

This review should also consider the desirability of upgrading the quality of the terminals by using cathode ray terminals (CRT) to replace the existing ones.

In order for schools to take the fullest advantage of OTIS services, it is necessary for the school personnel to have efficient access to a terminal.

As mentioned earlier, people in schools without terminals must submit their data to the business office to be entered on the terminal there, or drive to a nearby school with a terminal and enter the data there. Moreover, some schools report errors are made by the business office in inputting data. A terminal located in each school would be the most automated. However, since the cost of placing terminals in every school may be prohibitive, terminals should be assigned on a priority basis. The schools with the greatest enrollments have the greatest potential use for terminals since the secretaries at these schools must access and update more records.

This report recommends that the District study the economic feasibility of acquiring, either by purchase or lease, more terminals and that placement of those terminals be determined by school population. Of the five largest elementary schools, only one has a terminal. For example, Awbrey Park is larger than one junior high school, and almost as large as another, and yet Awbrey Park has no terminal.

The usage of instructional terminals in the secondary schools should also be examined to determine whether some of those machines might best be used as administrative terminals in elementary schools.

The District does not now conduct a periodic review of terminal location and usage and the conduct of such a review should be addressed in the creation of a data processing policy. The IED does not now conduct a review of terminal usage either.

3. In addition to changes in file contents, the file records themselves could be interrelated into an integrated data base.

The use of integrated data-base technology in other school districts was also examined for the purposes of this report. Visits were made to the research and data processing department of Dallas, Texas; Beaverton and Portland, Oregon; San Francisco, California; and Seattle, Washington. Dallas, Texas was picked to visit because it has a

reputation for having a very sophisticated operation. San Francisco and Seattle are currently using the TOTAL software package. The TOTAL program is sold by the Cincom Co., Inc., and is the largest-selling data-base management system in the United States. San Francisco is using TOTAL only upon its desegregation file and the monthly rental charge of approximately $1,000 is justified administratively by the necessity of having comprehensive desegregation information. Seattle has five of its major files on TOTAL and is halfway through a five-to-six-year plan to put most of its files on TOTAL. Neither Portland nor Dallas have integrated data-base capabilities. The Dallas data processing department has very fragmented files now, but says that within two years it will implement some data-base management capability. The Portland data processing department does not have any integrated data base capabilities, but says it would like to have some. Beaverton has a Digital Equipment Corporation pdp8/e and is working through a five-year plan to develop an Information Management System (IMS) and a Program Management System (PMS). Beaverton at present has no data-base management system, and processes its information in five to six data processing shops.

Two other regional educational computing facilities were contacted for the purposes of this report: Total Information for Educational Systems (TIES) of Minnesota, and the Remotely Accessible Management System (RAMS) of Pontiac, Michigan. As OTIS, both RAMS and TIES were created under P.L. 89-10. Both of these agencies use their own integrated data-base technologies.

Presently, the District's computer data are not organized into a coherent data-base mode. Rather, the District has a good bookkeeping system but no management information system. For example, the new Handbook II accounting system will provide more accurate cost-finding. However, since the District is presently unable to link cost data to student test results, staffing data and program operations, the addition of Handbook II will further complicate the problem of requesting specific linked information.

A case in point is the analysis of small schools. The District currently has approximately 2,500 spaces in the elementary schools which are not filled with students, and the average number of students in an elementary school is 325. Thus, the District has the equivalent of approximately eight unused schools. The cost analysis of this problem involves taking variables from different files, meshing them together and performing statistical calculations on them. This is a significant administrative problem involving factors of personnel, busing, boundary changes, enrollment projections and costs. The problem of calculating short and long-term costs of closing a school or set of schools cannot currently be accomplished given the District's current file structure.

The concept of data base has emerged out of recent advances in computer technology and management's demand to acquire data for its broad-range applications. The primary concerns of a data base are: (a) its contents, (b) how that data bank is structured, and (c) how data items are updated and retrieved. The data base structure is an improvement over

the traditional method of data management; with an integrated data base, all information is in one logical structure, rather than in disjointed files. In such a system, a given data item can be "linked" to another data item, even though the items are in different logical files. The techniques used to link the data together might increase storage requirements for file maintenance, but this is usually offset by the elimination of the redundancy which occurs when there are multiple files, and by the decreasing costs of core storage.

There are different ways of integrating a data base. For example, a base can be integrated mechanically into a tree structure of data or can be randomly assigned to a memory location and linked together through a system of pointers. In a data base system, the data used by computer programs are considered an independent resource in themselves, separate from the computer programs. That is, a particular program is not written for a specific file; rather, the programs access and correlate data across application lines--student, staff, fiscal, etc. Generalized inquiry programs are then capable of correlating and extracting a variety of data types, rather than being specially written to extract information from single files as is presently the case. The achievement of a capability like this is desirable.

The present requests for information, supra, are difficult to answer within the limitations of OTIS' present system. Some kind of integrated data base approach is necessary in order to process the information requests cited above. In the long run, the possession of integrated data-base capabilities could well be more cost-efficient than continuing to request specific services. Many of the information needs cited above could be provided by the District itself, if OTIS had these more sophisticated capabilities.

The need for better capabilities has also been emphasized by Warren Mellor, a doctoral candidate at the University of Oregon who recently completed a study of the relationships between OTIS and OTIS' users as a basis for his dissertation. He stresses that "users must be provided...with an upgraded capability for accessing their own data upon request and according to needs, and perhaps for writing their own programs that perform specialized and highly individualized District functions. In this way, OTIS more completely fulfills its service function by providing computing capabilities as well as merely specific data processing services."*

Mellor goes on to say that "It is not so much a matter of storing new data (though a need for some capability in this area has been expressed),

---

*Mellor, Warren, Computer Based Educational Information Systems, 1975. An Analysis of the Relationship between Innovation, Environment, and Patterns of System Use. Unpublished Doctoral Dissertation. College of Education, University of Oregon, 1975. Page 114.

as of making available new techniques for manipulating existing files."

OTIS does not have the technical expertise to identify or cost out potential capability changes. Their current staff time is about entirely taken up in day-to-day operations, and has neither the experience with integrated data base modes nor the time to review capability changes and cost them out. Therefore, the source of energy for this activity must come from outside OTIS.

The District has sponsored two seminars to review existing integrated data base software packages: TOTAL, the largest-selling software data base package on the commercial market, and DMS, a software package developed by Lane County. In general, any process of costing out options must of necessity include the technical cooperation of OTIS.

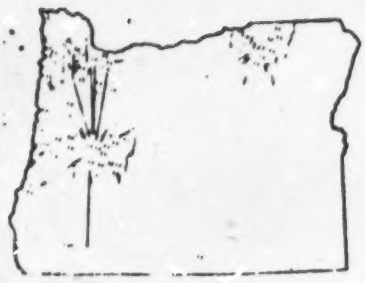
Closing Comments

It is easy to understand OTIS' position. Since it began operating, OTIS has been plagued with the stress of financial uncertainties. Now that it has attained economic stability and reliability of services, requests for improved capabilities are interpreted by OTIS to involve staff retraining and developmental costs for improvements whose marketing potential has not been explored and encouraged. However, versatility is an essential factor in a service organization such as OTIS. This view is stated in the original proposal that secured federal funding for the inception of OTIS. Two of the goals of OTIS' original planning team were:

a. to build and maintain a service organization that can provide Oregon schools with the hardware and technical staff necessary to meet their computer requirements, and

b. to develop with each user a plan that will assure individual districts' satisfaction as well as efficient and economical utilization of OTIS' hardware and staff.

In order to fulfill these goals, this review of data processing services recommends that a process be started to create a District policy on data processing services. This process should review the District's need for information, the computer capabilities required to meet these needs, the advisability of reorganizing 4J file structures, the lease or purchase of software data-base programs, the lease or purchase of small computers, terminal usage, and the legal structure affecting the transmittal of data processing funds through the IED.



oregon total information system
1200 Highway 99 North, Eugene, Oregon 97402

September 10, 1975

Dr. Les Hendrickson
Evaluation Specialist
Eugene Public Schools
200 North Monroe Street
Eugene, Oregon 97402

Dear Dr. Hendrickson:

The OTIS management group has read "An Evaluation of OTIS Services" (August 25, 1975) with great interest. We understand that our comments will be included as an addendum in the final version.

We would first like to present our view of what OTIS is. This discussion will provide greater perspective for your readers' evaluation of your comments. A basic definition of OTIS appears in the May 1975 OTIS Advisory Committee materials. This definition, which is not referenced in your report, is very important to any evaluation of OTIS, since it sets forth the OTIS legal basis and policy-making procedures.

> OTIS is a division of the Lane Intermediate Education District providing data processing services, for a fee, to school districts within Oregon. All full service users are entitled to equal services and a voice in decision-making regarding those services. The Lane IED is the legal body which has final authority and provides for user input through recommendations from the OTIS Advisory Committee.
>
> [Definition of OTIS, May 1975 Advisory Committee Agenda In

The purpose of this Advisory Committee is, according to these materials:

> ... to establish a body of administrators of user districts to provide recommendations to the legal governing body (Lane Intermediate Education District Board) in any areas of interest or concern in the OTIS operation.
>
> These areas of interest or concern may include, but shall not be limited to services, development, finance, procedures, personnel, etc.

From the standpoint of your report, probably the most important function of the Advisory Committee is to determine what services shall be offered as part of the contract with districts, and on what basis special services should be supplied. An evaluation of OTIS services, particularly one that concentrates on the needs of "special services," deserves to have an extended discussion of this input mechanism. Your report deals with the Advisory Committee in a single sentence.

OTIS is, of course, more than the basic definition above. It is a teleprocessing-oriented computer facility, utilizing over 200 terminals serving data processing needs for large and small school districts in Oregon. OTIS is a General Education Management System (GEMS), which permits users' control over their files through the teleprocessing network. GEMS, a major piece of software created by OTIS personnel, has allowed OTIS to develop the most comprehensive array of basic services to schools available anywhere. GEMS also makes possible Query, through which a user can design a unique computer search of his files. Both the creation of the search strategy and receipt of the output is done at one of the user's terminals. In almost all cases, the input of the search strategy and output of the report occur in the same day. Query is in addition to the "standard" reports of the basic services.

Few educational computer facilities offer teleprocessing to their users. Fewer have a GEMS-like organization. Fewer still have anything that approaches Query. Only three or four have as wide a range of administrative services.

This perspective of OTIS as compared to other data processing facilities also needs to be in your report. Perhaps the article by Dr. Alvin Grossman, "Let's Be Different," which is enclosed, will be useful to you in this respect. Dr. Grossman is one of the recognized authorities in K-12 computer services. In this article he lists OTIS as one of the four comprehensive educational systems in the country.

OTIS is also its users, who provide its sole source of revenue. OTIS has budgeted and expects to receive $1,041,072 from the 65 school districts contracted for administrative services. (Of this amount approximately 16% will represent District 4J's cost for OTIS administrative services. The Lane IED provides 38% of the budgeted figure for these services for all Lane County.) Approximately 150,000 students, 1/3 of all Oregon students, are represented on the OTIS user base.

OTIS is also its new services. Two new services are well into their implementation stages. These services, approved by the Advisory Committee, anticipate massive changes in school procedures. One is the U.S. Office of Education Revised Handbook II application. OTIS is one of the first in the country to make this service available. The other is the Oregon Minimum Graduation Requirements Record Keeping application. These significant additions will affect all the OTIS user base. When the mandatory start up dates are here, most, if not all, the OTIS users will be complying with the new requirements.

OTIS is also the improved services and new services it contemplates. The OTIS Advisory Committee has approved seven areas for OTIS study. Many of them are part of the "want lists" in your report. Your readers would be well served by a discussion of this list. This list is on page two of the Advisory Committee

minutes (enclosed). Eugene District 4J was represented at the meeting when these areas were discussed. Copies were sent to all OTIS users. Specifically, Superintendent Tom Payzant, Vernon Smith, and Hank Kelley were mailed copies.

In addition to page 2 of the minutes and Dr. Grossman's article, enclosed is the Advisory Committee established "Guidelines to Costing Out Special Applications." Since the thrust of the report seems to be the area of special services, this document is important.

Dr. Hendrickson, there are several issues and inaccuracies in your report that we would like to address here, but we shall confine ourselves to a few because of the time limit imposed by your deadline for our response.

The first is the inclusion of Charles Hamby's "OTIS Evaluation." It seems inappropriate to use a report generated in 1969 to evaluate OTIS today. It would seem that a comparison of the 1969 and 1975 report would shed some light on the current District 4 position. One survey your report could reveal in more detail is the one conducted for your study. What are Beaverton, Portland, San Francisco, Dallas and Seattle doing about the issues you raise? How are the services they are getting comparable to District 4J's? Though your report doesn't mention it, what did your poll of the OTIS users other than Eugene reveal?

Your report claims that several Eugene 4J requests were rebuffed by OTIS, but "District [4J]-initiated political action" secured them. You do not note that all the requests, save one, were OTIS Advisory Committee approved. Your language suggests subterfuge.

Probably the most salient service of the report to OTIS is focusing our attention sharply on the possibility of a data based management system. Our observation agrees with your comment that such a system, particularly one that would satisfy the Eugene District, may not be feasibly run on the OTIS system. We would do what we can, of course, within the guidelines layed down by the Advisory Committee, to assist your district in data proparation for running this application, and any other, on a separate computer system.

We suggest that you may want to mention the difference between a data management system, which OTIS is, and a data based management system, which is a technique we are studying for its utility. Probably you are aware of the pros and cons of such systems, though your report does not reveal it. As a service to your readers, such a discussion would not be out of order. Enclosed are two articles, one on each type of the information management systems, published by Datapro, one of the authorities on EDP.

(Incidentally, the editorial "we" used herein refers to the four members of our management group. It is made up of Jim Ekstrom, Assistant Director; Bill Land, Business Services Department Head; Ben Jones, Instructional Services Department Head; and myself.)

Dr. Hendrickson, we recognize that your department has been frustrated by an inability to get your special requests done through OTIS. We have tried very hard to explain why we cannot do some of them. Sometimes the request goes against established policy. Sometimes the request just can't be done with our current configuration. Sometimes, more often than not, enough details are not provided for us to make a serious decision about the request. To the half dozen or so requests to which we have responded affirmatively, your office has not even acknowledged receipt of our job and cost analysis.

You complain that "the burden of requesting and identifying improvements should not be so lopsidedly borne by user districts." This complaint comes despite OTIS' two major service additions, and despite the several ongoing areas we have under study. But surely, in the last analysis, the user is in the best position to determine the kind of service he wants. And a thing cannot be done, especially in an EDP environment, without carefully identifying what is to be done.

We would like to have your department, if it represents Eugene District, work with the Advisory Committee in establishing your needs and the ways to meet them.

Best regards,

R. L. Dusenberry

Robert L. Dusenberry
Director

RLD/jvr
Enclosures

Technical Development

A recess in the meeting was suggested to provide the opportunity to review the position statements and proposed recommendations from the OTIS administration relative to the problem of special services requests from user districts. (The position statements and proposals are provided in the accompanying Director's Report.)

There was considerable discussion on the pros and cons of various solutions to the problem.

A motion was made and approved for the OTIS staff to proceed in the first six recommendations:

1. A study be made of the current potential and problems in developing cross file referencing and manipulation of data before any decision is made to implement work in this area.
2. Efforts be continued to strengthen the current Query application to provide more effective file search capabilities so that on-line storage data may be retrieved in the best format for utilization.
3. On-line storage capability be provided to users (at cost) to hold special data output from OTIS files or to develop files not currently stored (see #4 below). Processing capability shall be provided for any data manipulation or reports from these files.
4. Remote Job Entry capability be considered as a means for the user to access and to manipulate specially stored data by an OTIS or user developed problem program.
5. The "remote data center" concept be studied further for its practical implications.
6. Implement the latest IBM Operating System release (21.8).

The seventh OTIS proposal was replaced by a motion that OTIS should employ one additional programmer/analyst to be available for software development to meet special user requests.

Advisory Committee Purposes and Organization

The motion was made and approved that the following proposals be adopted:

1. Purpose - To establish a body of administrators of user districts to provide recommendations to the legal governing body (Lane Intermediate Education District Board) in any areas of interest or concern in the OTIS operation.

   These areas of interest or concern may include, but shall not be limited to services, development, finance, procedures, personnel, etc.

2. Membership - a) Membership from the counties on resolution for OTIS services shall be by annual appointment of the IED superintendent. b) Membership from established areas shall be by appointment of the Advisory Committee. Term of office shall be for three years. c) Organization representation shall be by appointment as determined by the executive officer of the organization and shall continue to serve until other action is taken.

Page 27 removed due to copyright. Contained "Let's Be Different!" by Alvin Grossman, AEDS Monitor; April, 1974.

OREGON TOTAL INFORMATION SYSTEM

354 E. 40th Street
Eugene, Oregon 97405

Guidelines Established for Costing Out Special Applications or Services

1. Requests for special data processing assistance shall be subject to evaluation by OTIS management to insure that the requested service is within the system's capability and that the service will not jeopardize existing systems, personnel commitments or physical resources.

2. All costs connected with special requests shall be charged to the requesting OTIS user on a time and materials basis at the established rate.

3. The mechanics of initiating and implementing a special service for an OTIS user shall be as follows:

   a. Using a form provided by OTIS, the user will convey to OTIS management the particulars of his request, including volume, time frame required, frequency, etc.

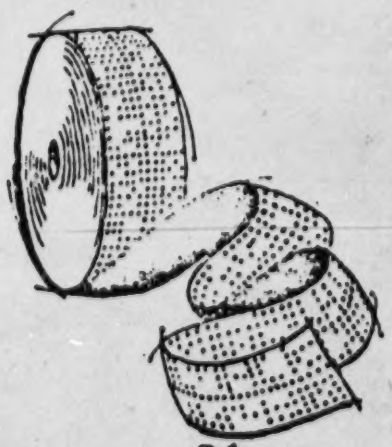
   b. Requests meeting specified requirements will be costed out by OTIS management on the basis of the best estimates available. A report indicating estimated time for completion, costs, problems, priorities, etc. Billings will be based on actual expenditures incurred.

   c. An invoice covering the actual cost of services rendered will be submitted to the requester monthly.

   d. Any request for cyclic report development or rerun, other than OTIS error, it is understood, would essentially constitute a separate request for service, subject to specified requirements.

   e. Programs developed at the request of and paid for by an OTIS user may be used by other OTIS members.

4. A specially developed program approved for general usage by the OTIS Advisory Committee shall become a regular service application.



Pages 29-31 removed due to copyright restriction. Contained "A Buyer's Guide to Data Base Management Systems", November 1974, 70E-010-61a, Datapro Research Corporation, Delran, New Jersey 08075.